NORTH ATLANTIC TREATY ORGANIZATION
ORGANISATION DU TRAITE DE L'ATLANTIQUE NORD

MILITARY AGENCY FOR STANDARDIZATION (MAS)
BUREAU MILITAIRE DE STANDARDISATION (BMS)

1110 BRUSSELS

MAS/280-MMS/2916
6 November 1989

To : See MAS Distribution Listl No. 2

Subject : STANAG 2916 MMS (EDITION 1) - NOSE FUZE CONTOURS AND MATCHING PROJECTILE CAVITIES FOR ARTILLERY AND MORTAR PROJECTILES

Reference : AC/310-D/66 dated, 31 August 1987

Enclosure : STANAG 2916 (Edition 1)

1. The enclosed NATO Standardization Agreement which has been ratified by nations as reflected in page iii is promulgated herewith.

2. The reference listed above is to be destroyed in accordance with local document destruction procedures.

3. AAP-4 should be amended to reflect the latest status of the STANAG.

ACTION BY NATIONAL STAFFS

4. National staffs are requested to examine page iii of the STANAG and if they have not already done so, to advise the Defence Support Division, IS, through their national delegation as appropriate of their intention regarding its ratification and implementation.

A.J. MELO CORREIA
Major-General, POAF
Chairman, MAS

241 mv
MAS280

STANAG 2916
(Edition 1)

NORTH ATLANTIC TREATY ORGANIZATION.
(N A T O)

MILITARY AGENCY FOR STANDARDIZATION
(M A S)

STANDARDIZATION AGREEMENT

SUBJECT : NOSE FUZE CONTOURS AND MATCHING PROJECTILE CAVITIES FOR ARTILLERY AND MORTAR PROJECTILES

Promulgated on 6 November 1989

A.J. MELO CORREIA
Major-General, POAF
Chairman, MAS

STANAG 2916
(Edition 1)

RECORD OF AMENDMENTS

No.	Reference/date of amendment	Date entered	Signature

EXPLANATORY NOTES

AGREEMENT

1. This NATO Standardization Agreement (STANAG) is promulgated by the Chairman MAS under the authority vested in him by the NATO Military Committee.

2. No departure may be made from the agreement without consultation with the tasking authority. Nations may propose changes at any time to the tasking authority where they will be processed in the same manner as the original agreement.

3. Ratifying nations have agreed that national orders, manuals and instructions implementing this STANAG will include a reference to the STANAG number for purposes of identification.

DEFINITIONS

4. Ratification is "The declaration by which a nation formally accepts the content of this Standardization Agreement".

5. Implementation is "The fulfilment by a nation of its obligations under this Standardization Agreement".

6. Reservation is "The stated qualification by a nation which describes that part of this Standardization Agreement which it cannot implement or can implement only with limitations".

RATIFICATION, IMPLEMENTATION AND RESERVATIONS

7. Page iii gives the details of ratification and implementation of this agreement. If no details are shown it signifies that the nation has not yet notified the tasking authority of its intentions. Page iv (and subsequent) gives details of reservations and proprietary rights that have been stated.

Agreed English/French Texts

STANAG 2916
(Edition 1)

ARMY

NATO STANDARDIZATION AGREEMENT
(STANAG)

NOSE FUZE CONTOURS AND MATCHING PROJECTILE CAVITIES FOR ARTILLERY AND MORTAR PROJECTILES

Annexes: A - Preferred Fuze Contour and Projectile Cavity Combinations
B - Permissible Fuze Contour and Projectile Cavity Combinations
C - Preferred Automatic/Hand Setter Slots for Mechanical Time Ring-Set Fuzes
D - Permissible Hand Setter Slots for Ring-Set Fuzes
E - Definitions and Abbreviations

Related Documents:

- STANAG 4183; NATO Metrication Policy
- (ISO) Standard 1000 - SI Units and Recommendations for the Use of Their Multiples and Certain Other Units
- (ISO) Standard 31 - General Principles Concerning Quantities, Units and Symbols
- (ISO) Standard 370 - Tolerance Dimensions - Conversion from Inches to Millimetres and Vice Versa
- FED-STD-H28; Federal Standard, Screw-Thread Standards for Federal Services
- ANSI Y14.5M-1982; American National Standard Engineering Drawings and Related Documentation Practices

AIM

1. The aim of this agreement is to achieve physical interchangeability and ballistic match within any one family of nose fuzes used with artillery and mortar projectiles, 60mm and larger.

AGREEMENT

2. Participating nations agree to conform to the requirements of this STANAG in the development of fuzes, projectiles, setters and accessories in respect to the following features:

(a) Contact Surfaces
(b) Fuze Length
(c) Intrusion
(d) Projectile Cavity
(e) Setter Slots
(f) Thread Size
(g) Wrench Slots

All other features shown in the figures are for information only.

DEFINITIONS AND ABBREVIATIONS

3. The definitions and abbreviations of terms used in this STANAG will be found in Annex E.

GENERAL

4. The units used in Figures 1 through 14 (Annexes A,B,C,D) conform to the International System (SI) of metric units except those used for thread designations which are in English units (e.g., 2-12 UNS-1A).

5. Drawing practice and symbology are in accordance with the international methods covered in the "American National Standard Engineering Drawings and Related Documentation Practices," ANSI Y14.5M-1982.

6. Participating nations are to provide forecast dates when they will cease to use deep intrusion fuzes and/or deep intrusion fuze cavity details as per Figure 7 (Annex B). These forecast dates will be used during periodic review of this STANAG with a view to deleting these combinations when appropriate.

DETAILS OF THE AGREEMENT

7. In addition to physical interchangeability, the various types of nose fuzes, PD, prox, time, shall, when fired with a given projectile type, follow the same ballistic trajectory to the same burst point. Minor differences which can be adjusted by specifying an appropriate firing table weight correction are acceptable. Firings shall be used to confirm such performance.

8. Certain fuze/projectile combinations may require close control of fuze weight, center of gravity, and contour for ballistic consideration. As an example, for the 76mm OTO Melara, 3 inch 62 caliber, and 5 inch 54 caliber projectiles, a fuze weight of 952.56 ± 22.68 grams is preferred.

9. Preferred fuze contour and projectile cavity combinations must be in accordance with Figures 1 through 6 (Annex A). Currently available permissible fuze contour and projectile cavity combinations are shown in Figures 7 through 9 (Annex B).

10. Preferred automatic/hand setter slots for mechanical time ring-set fuzes must be in accordance with Figures 11 and 12 (Annex C). Currently available permissible hand setter slots for ring-set fuzes are shown in Figures 13 and 14 (Annex D). The need for special setters for future hand set fuzes should be eliminated. (Standards for designing future electronic fuzes for both mechanical and automatic setting are being developed and will be included in future revisions of this STANAG.) New fuze setting techniques requiring special setter slots shall require AC/310 approval prior to type classification.

11. The 1.5 and 2.0 inch mating threads (fuze and projectile) are standard threads. Other size mating threads are used, generally for safety reasons, to prevent interchangeability. Such examples are shown in Figures 9 and 10 (Annex B).

12. When mortar projectiles are prefuzed in manufacture without field refuzing intentions, intrusion dimensions are optional.

13. Deviations from the maximum material conditions shown for the fuze intrusion and projectile cavity shall take into account operational and safety considerations.

IMPLEMENTATION OF THE AGREEMENT

14. This STANAG is implemented when a nation has issued instructions that all equipment procured for its forces will be manufactured in accordance with the specifications detailed in this agreement.

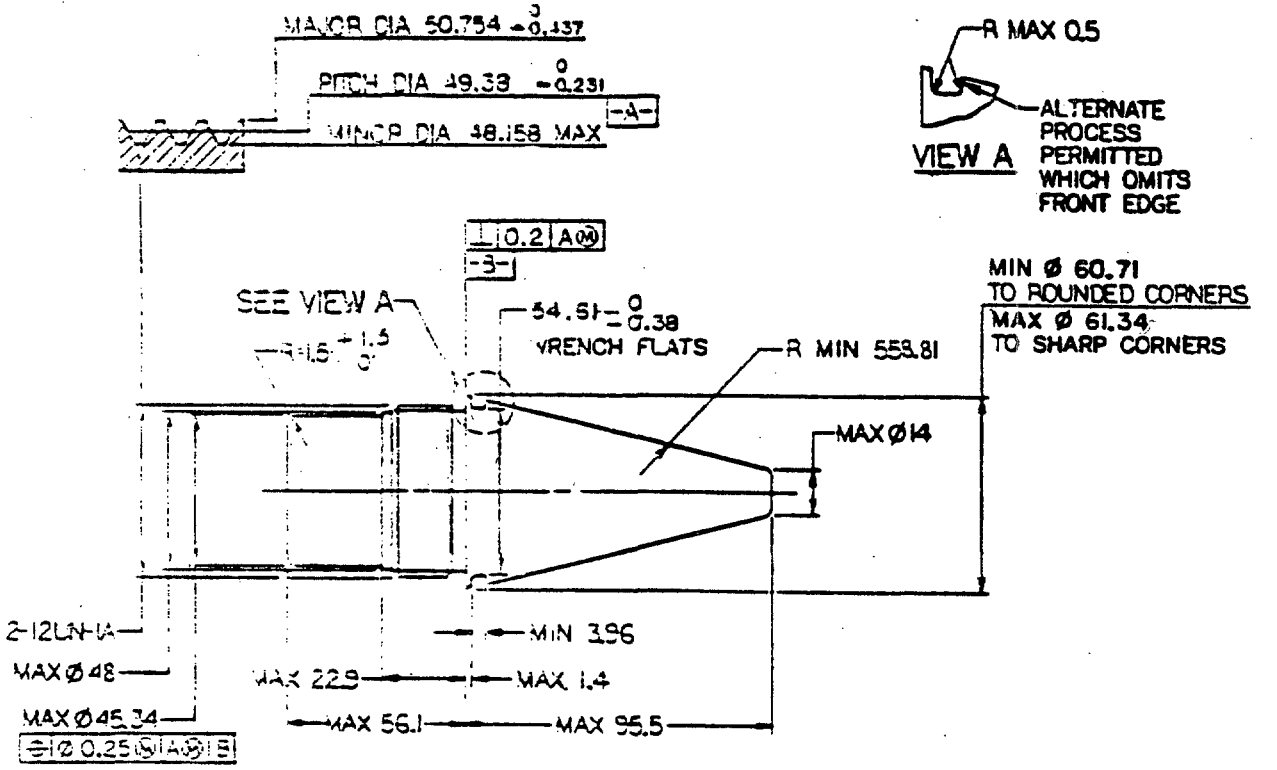
ANNEX A to
STANAG 2916
(Edition 1)

PREFERRED FUZE CONTOUR AND PROJECTILE CAVITY COMBINATIONS

Index of Figures

Preferred fuze contour and projectile cavity combinations must be in accordance with Figures 1 through 6.

FUZE USE	CAVITY DIA/DEPTH	FIGURE
ARTY/MORTAR (HE/WP) SPIN AND FIN STABILIZED	2 in./56mm	1
ARTY/MORTAR (CARGO) SPIN STABILIZED	2 in./42mm	2
ARTY (CARGO)(ICM) SPIN AND FIN STABILIZED	2 in./42mm	3
MORTAR (CARGO) FIN STABILIZED	2 in./16mm	4
MORTAR (HE/CARGO) FIN STABILIZED	1.5 in./28mm	5
MORTAR (WP) FIN STABILIZED	1.5 in./15mm	6



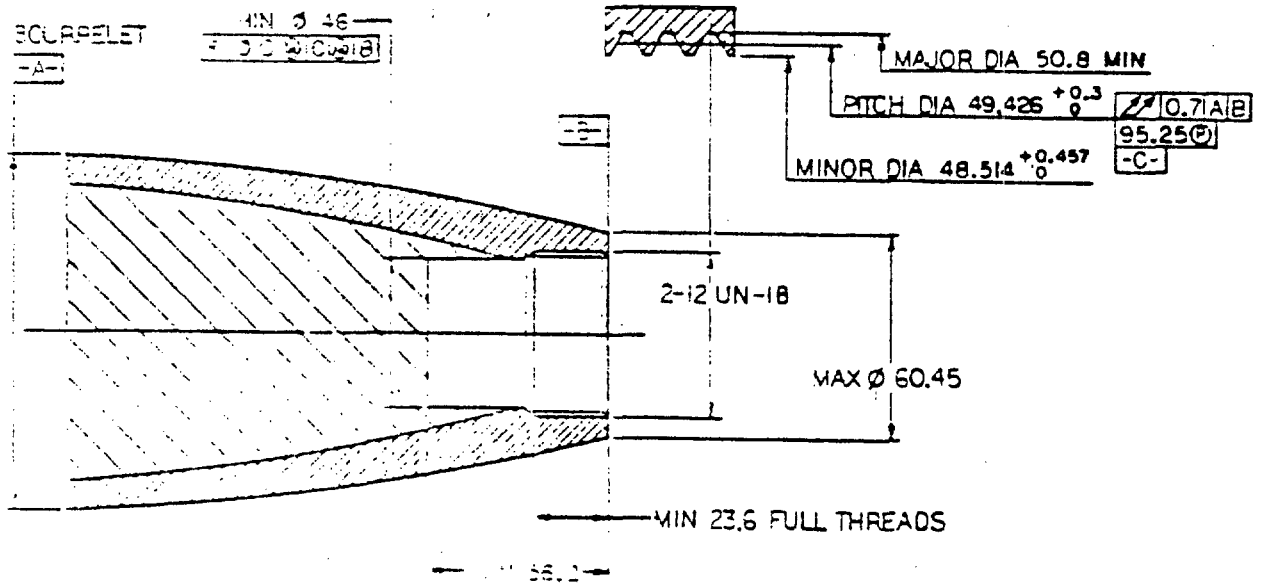
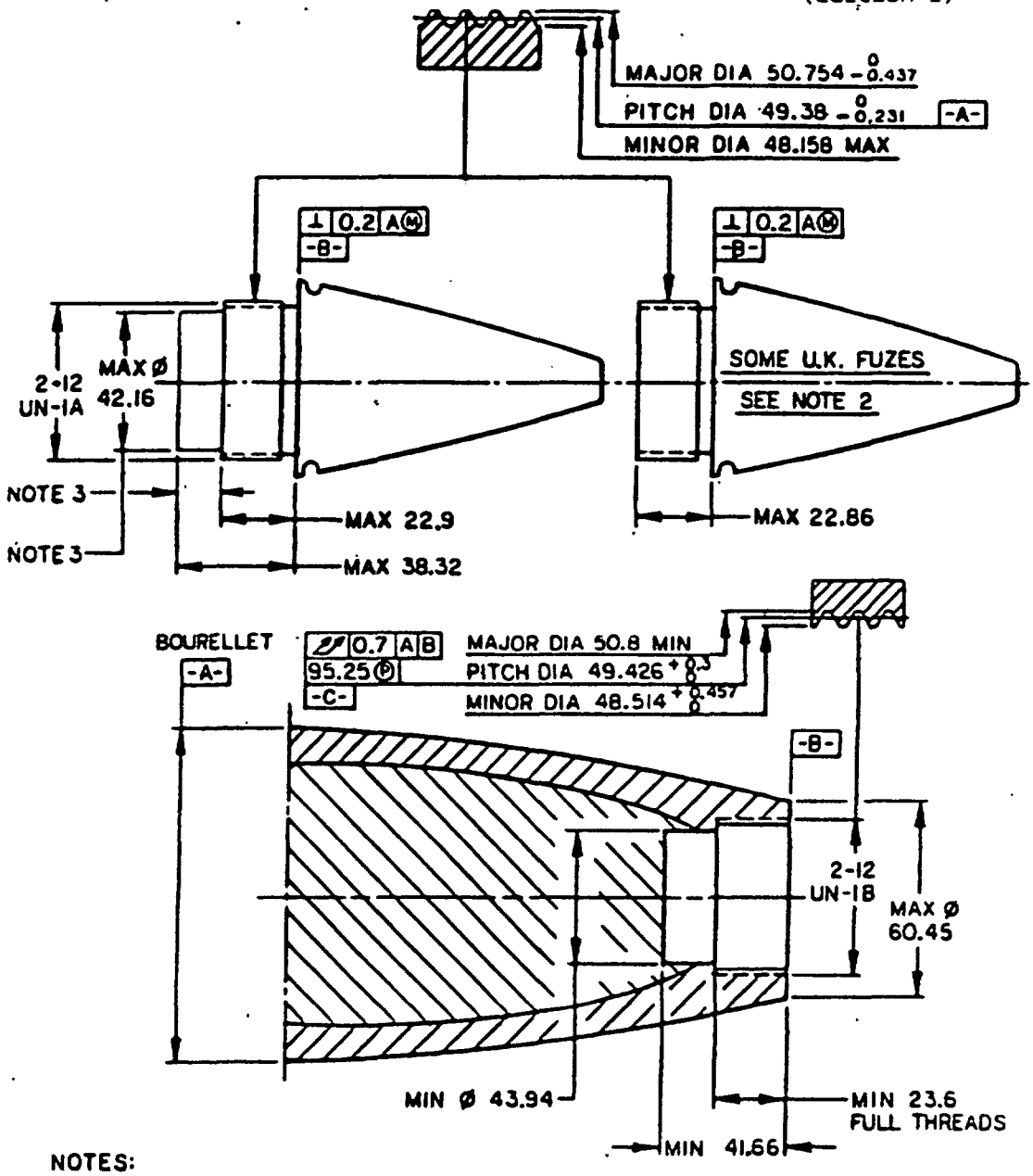


FIGURE 1

STANDARD CONTOUR FOR 2-INCH NOSE FUZES WITH BOOSTER AND MATCHING CAVITY FOR ARTILLERY AND MORTAR HE/WP PROJECTILES (SPIN AND FIN STABILISED).



NOTES:

1 - FOR OTHER FUZE DIMENSIONS SEE FIGURE 1.

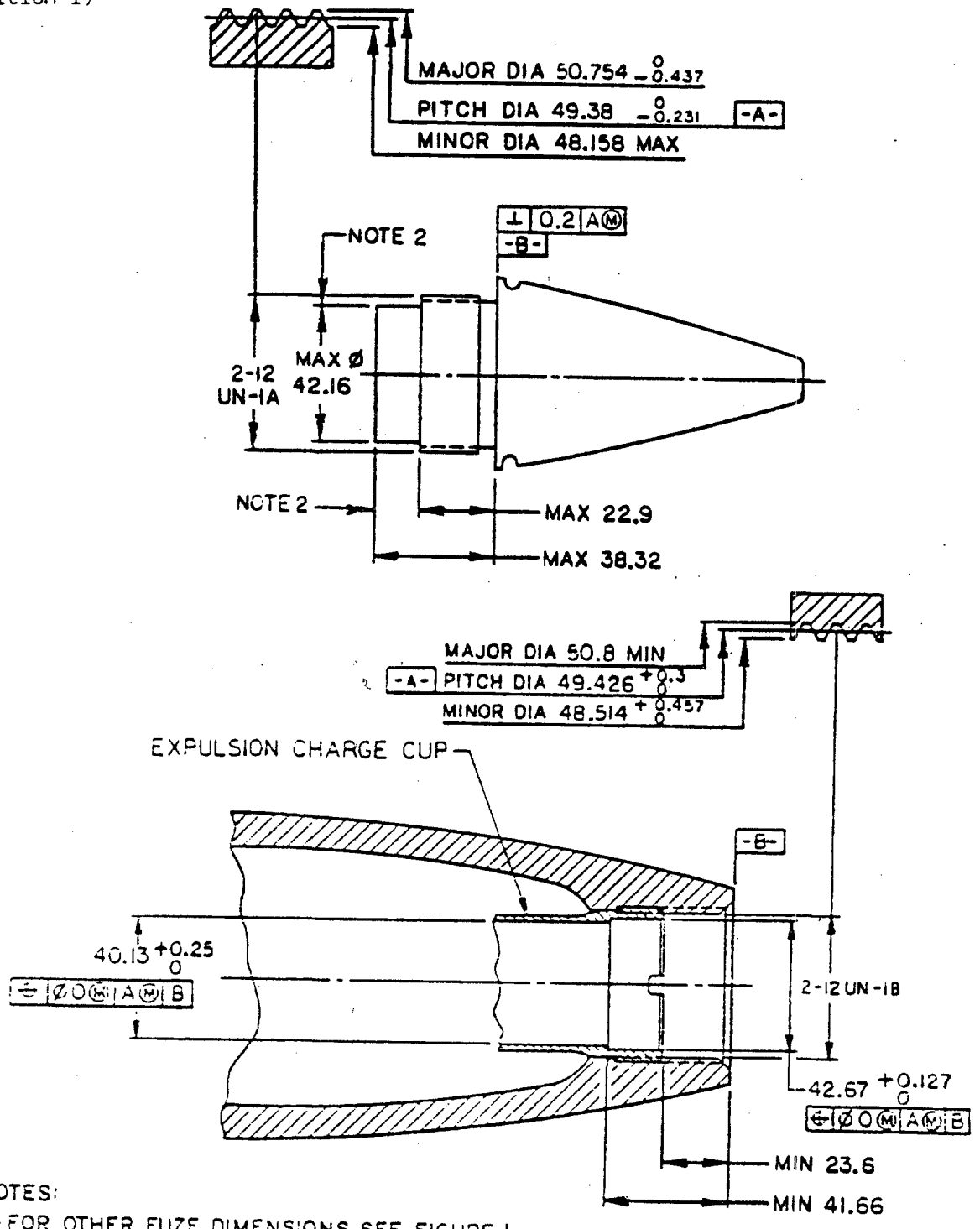
2 - U.K. MECHANICAL TIME FUZES FOR FH70 AMMUNITION FOR CARGO ROUNDS.

3 - THREADS ARE OPTIONAL WITHIN NOTED CONTOUR.

FIGURE 2

STANDARD CONTOUR FOR 2-INCH NOSE TIME FUZES AND MATCHING CAVITY FOR ARTILLERY AND MORTAR CARGO PROJECTILES (SPIN STABILIZED).

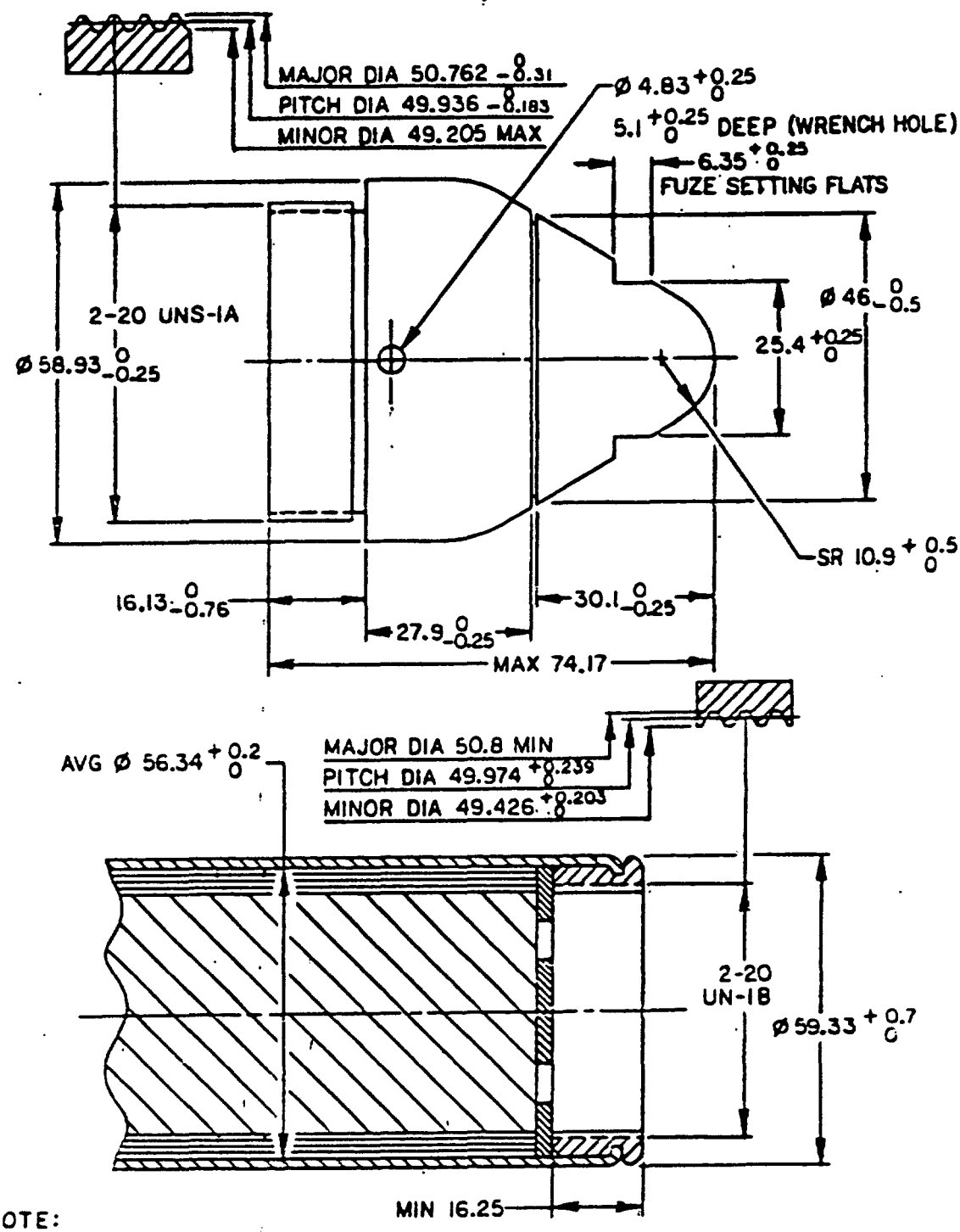
ANNEX A to
STANAG 2916
(Edition 1)



NOTES:
1 - FOR OTHER FUZE DIMENSIONS SEE FIGURE 1
2 - THREADS ARE OPTIONAL WITHIN NOTED CONTOUR

FIGURE 3

STANDARD CONTOUR FOR 2-INCH NOSE TIME FUZES AND MATCHING CAVITY FOR ARTILLERY AND MORTAR CARGO PROJECTILES (ICM) (SPIN AND FIN STABILIZED)

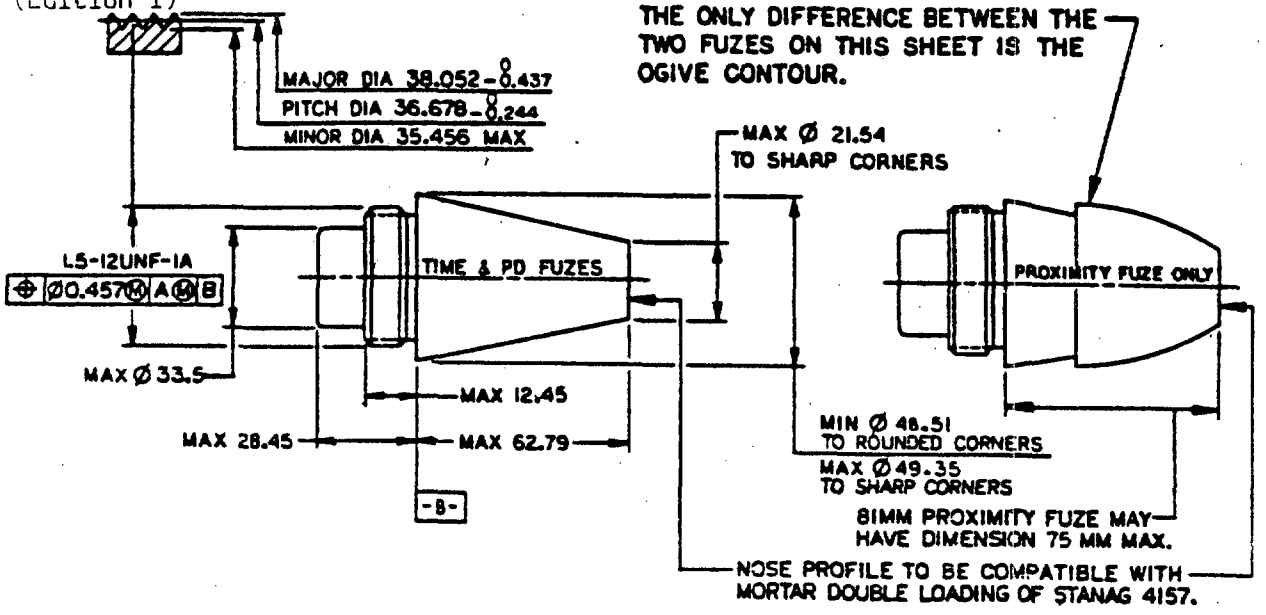


NOTE:
1-WRENCH HOLE IS OPTIONAL.

FIGURE 4

STANDARD CONTOUR FOR 60 MM MORTAR NOSE FUZES AND MATCHING CAVITY FOR 60 MM MORTAR CARGO PROJECTILE.
(FIN STABILIZED)

ANNEX A to
STANAG 2916
(Edition 1)



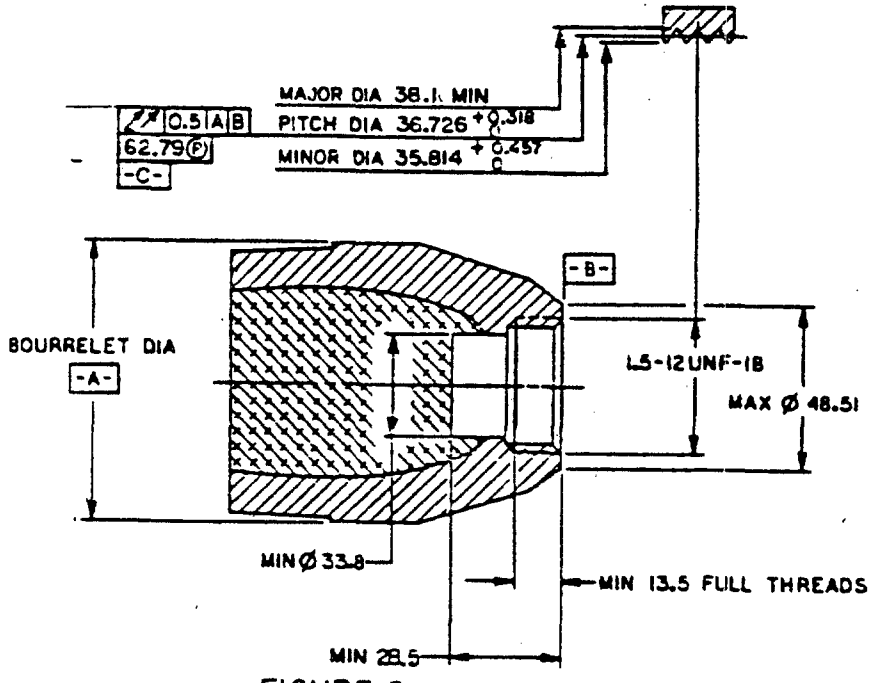


FIGURE 5

STANDARD CONTOUR FOR 1.5-INCH PROXIMITY, TIME, AND POINT DETONATING FUZES WITH BOOSTER AND MATCHING CAVITY FOR 60 MM AND 81 MM MORTAR HE PROJECTILES (FIN STABILIZED).

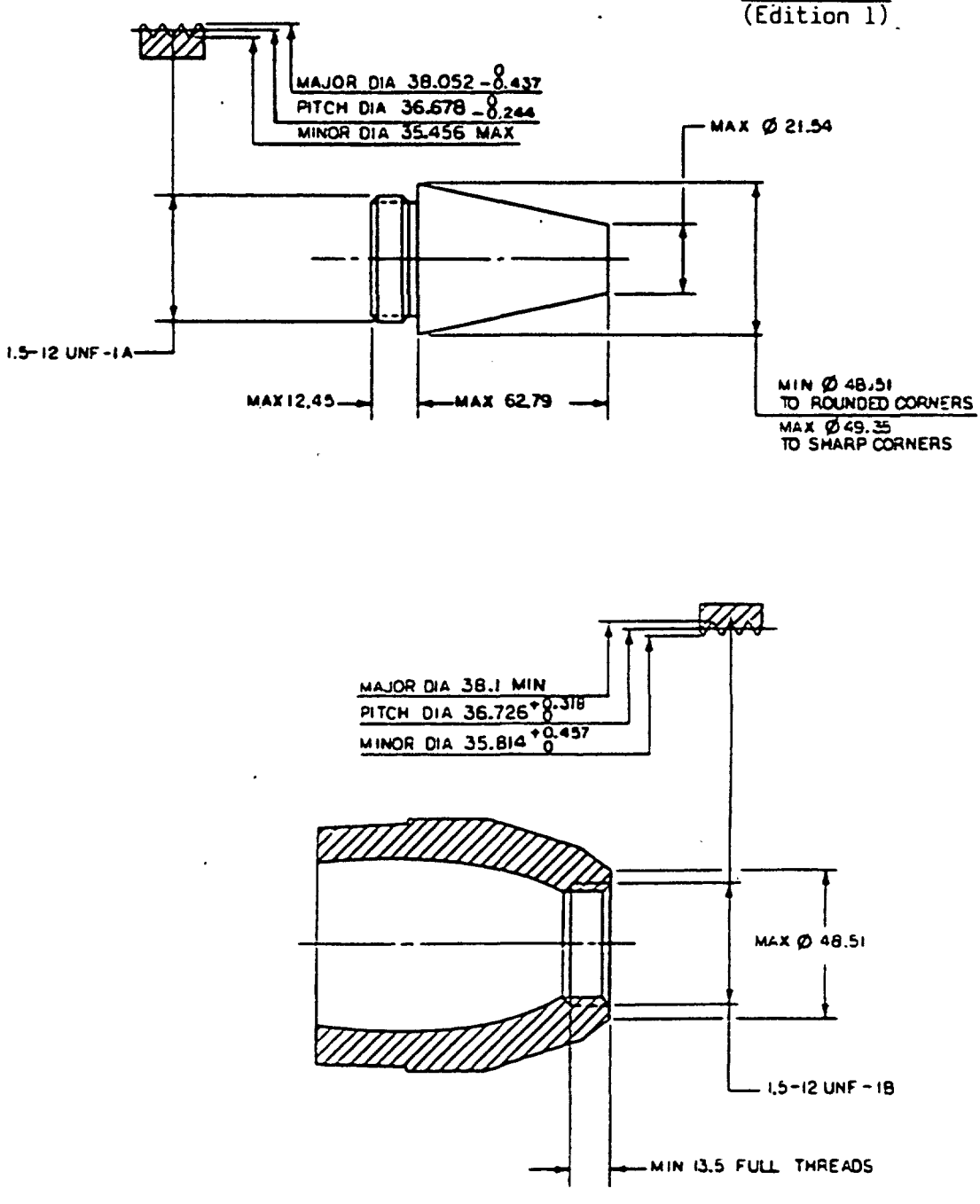


FIGURE 6

STANDARD CONTOUR FOR 1.5-INCH TIME AND POINT DETONATING FUZES AND MATCHING CAVITY FOR 60 MM AND 81 MM MORTAR CARGO PROJECTILES (FIN STABILIZED)

ANNEX B to
STANAG 2916
(Edition 1)

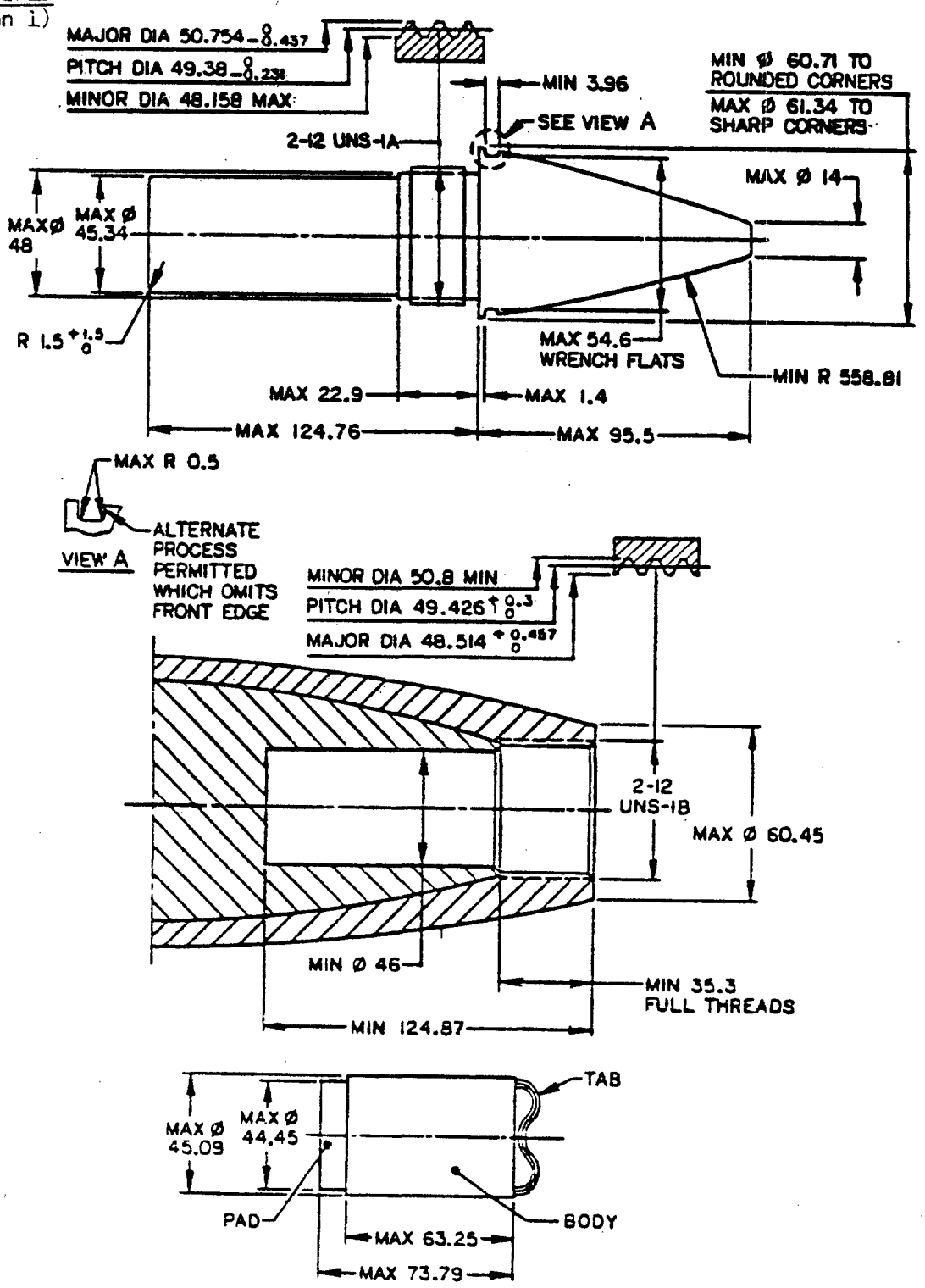
PERMISSIBLE FUZE CONTOUR AND PROJECTILE CAVITY COMBINATIONS

Index of Figures

Currently available permissible fuze contour and projectile cavity combinations are shown in Figures 7 through 10.

FUZE USE	CAVITY DIA/DEPTH	FIGURE
ARTY/MORTAR (HE) SPIN STABILIZED	2 in./125mm	7
ARTY (HE)(5 in./54 CALIBERS) SPIN STABILIZED	2 in./57mm	8
ARTY (CARGO)(APERS) SPIN STABILIZED	1.9 in./38mm	9
MORTAR (ILLUM/SMOKE) FIN STABILIZED	2.4 in./16mm	10

ANNEX B to
STANAG 2916
(Edition 1)

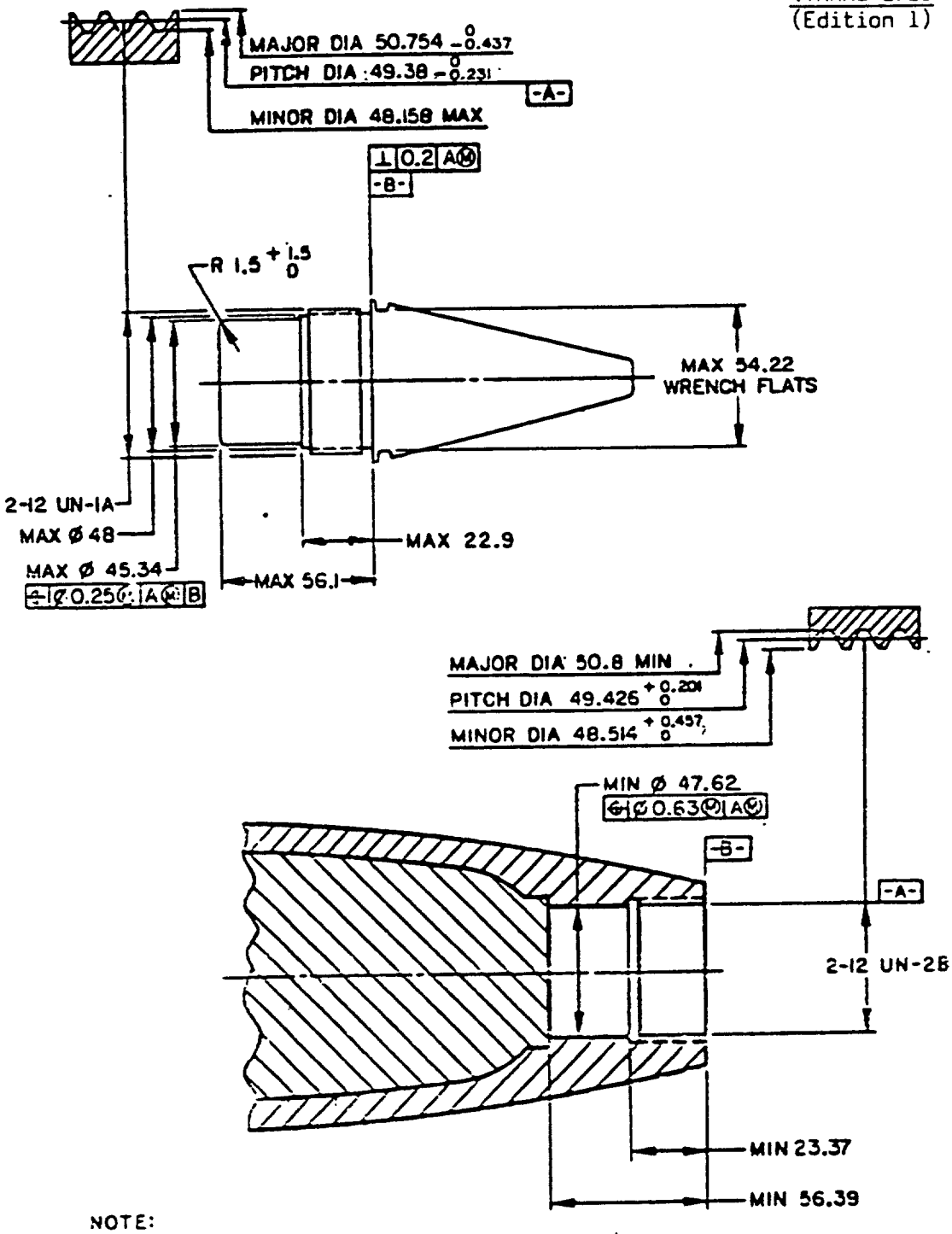


SUPPLEMENTARY CHARGE ASSEMBLY

NOTES:
1 - SUPPLEMENTARY CHARGE IS USED WITH 56 MM INTRUSION FUZE.

FIGURE 7

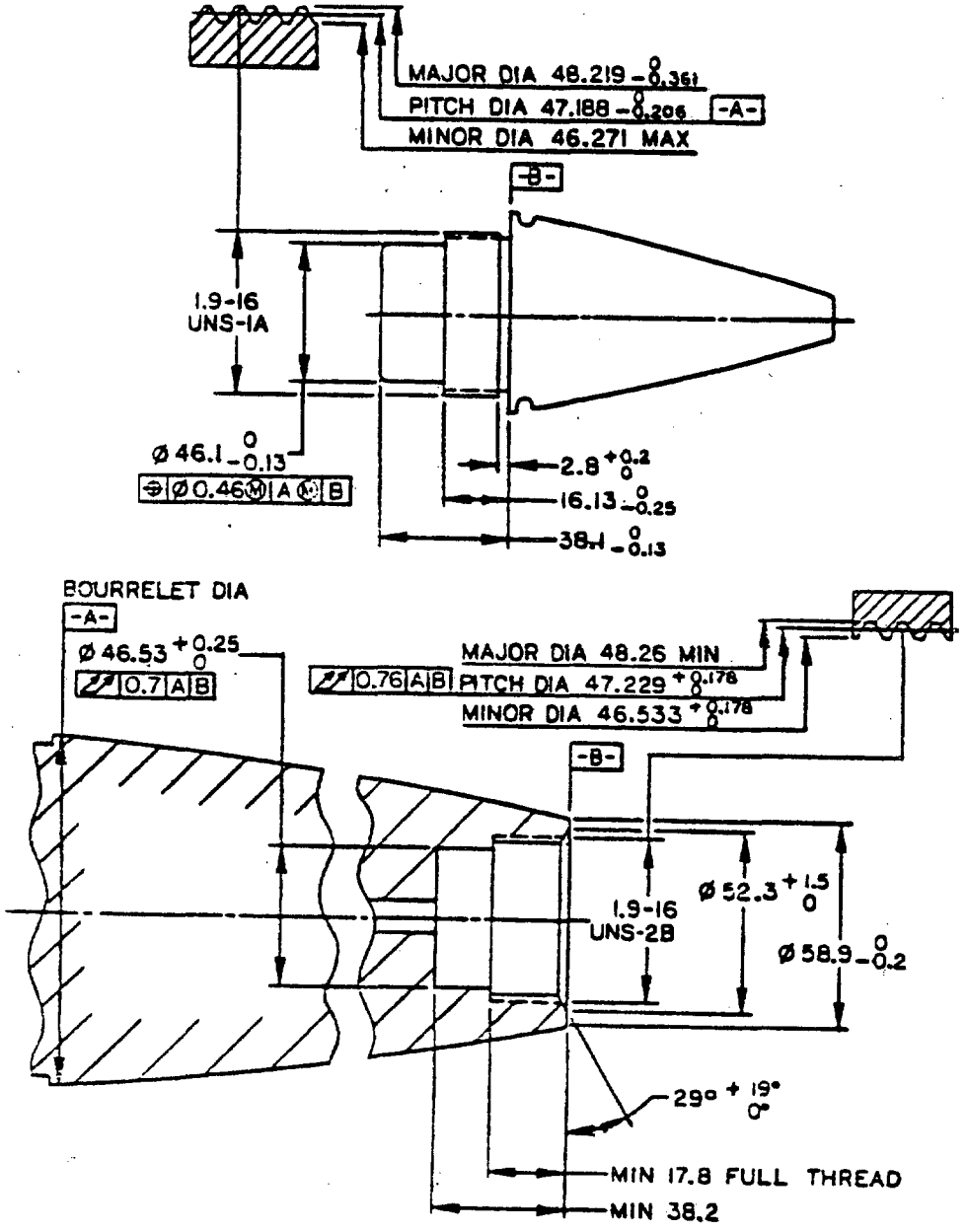
STANDARD CONTOUR FOR 125 MM INTRUSION 2-INCH PROXIMITY NOSE FUZES WITH BOOSTER AND MATCHING CAVITY FOR ARTILLERY AND MORTAR PROJECTILES (SPIN STABILIZED)



NOTE:
1 - FOR OTHER FUZE DIMENSIONS SEE FIGURE 1.

FIGURE 8

STANDARD CONTOUR FOR 2-INCH NOSE FUZES WITH BOOSTER AND MATCHING CAVITY FOR ARTILLERY HE EXPLOSIVE LOADING 5"/54 PROJECTILE (NAVY) (SPIN STABILIZED).



NOTES:
1- FOR OTHER FUZE DIMENSIONS SEE FIGURE 1.
2- FUZE IS USED WITH MUZZLE ACTION FUZE SETTING ON ARTILLERY, TANK, AND RECOILESS RIFLE PROJECTILES.

FIGURE 9

STANDARD CONTOUR FOR APERS NOSE FUZES AND MATCHING CAVITY FOR ARTILLERY, TANK, AND RECOILESS RIFLE PROJECTILES. (SPIN STABILIZED)

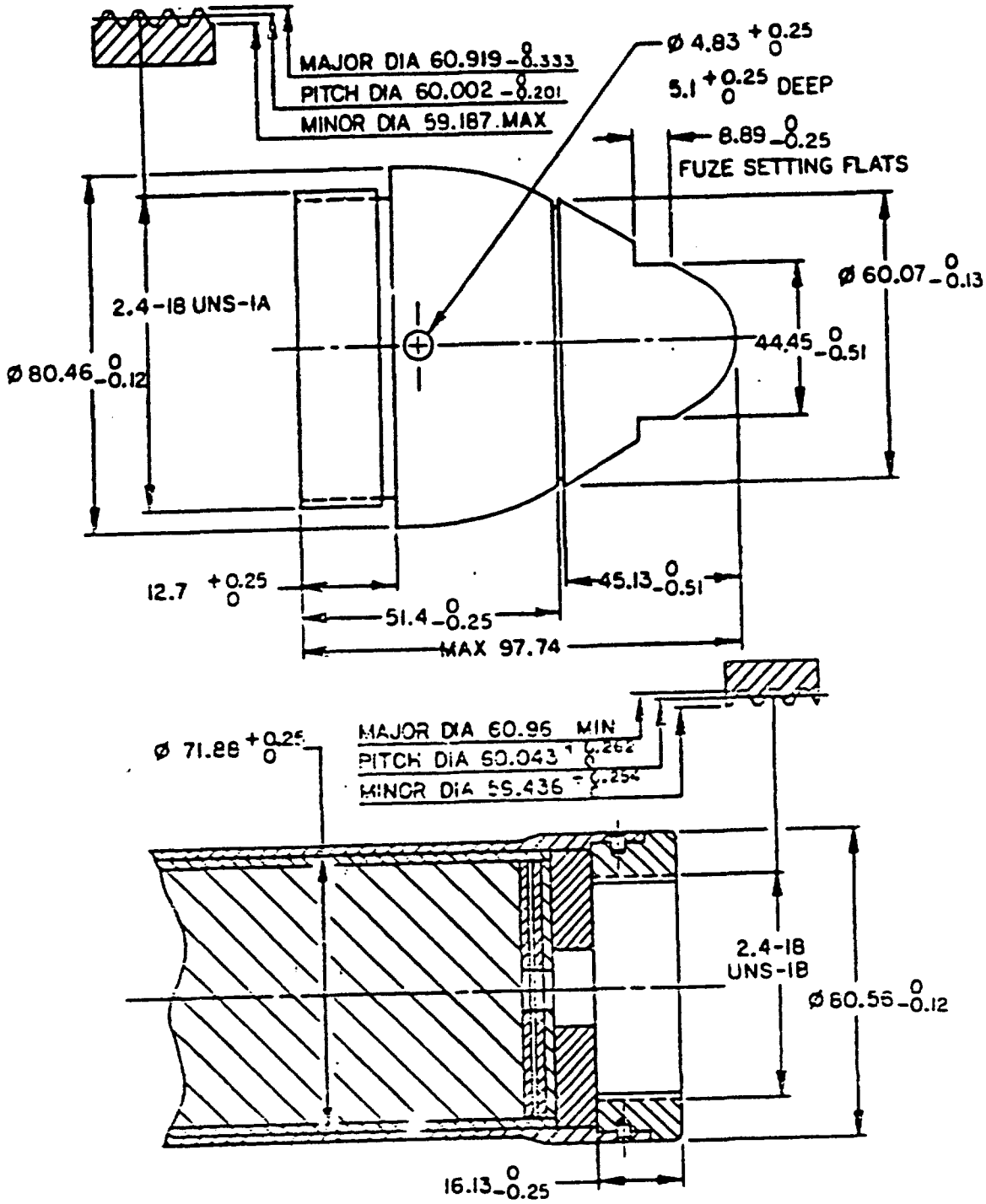


FIGURE 10

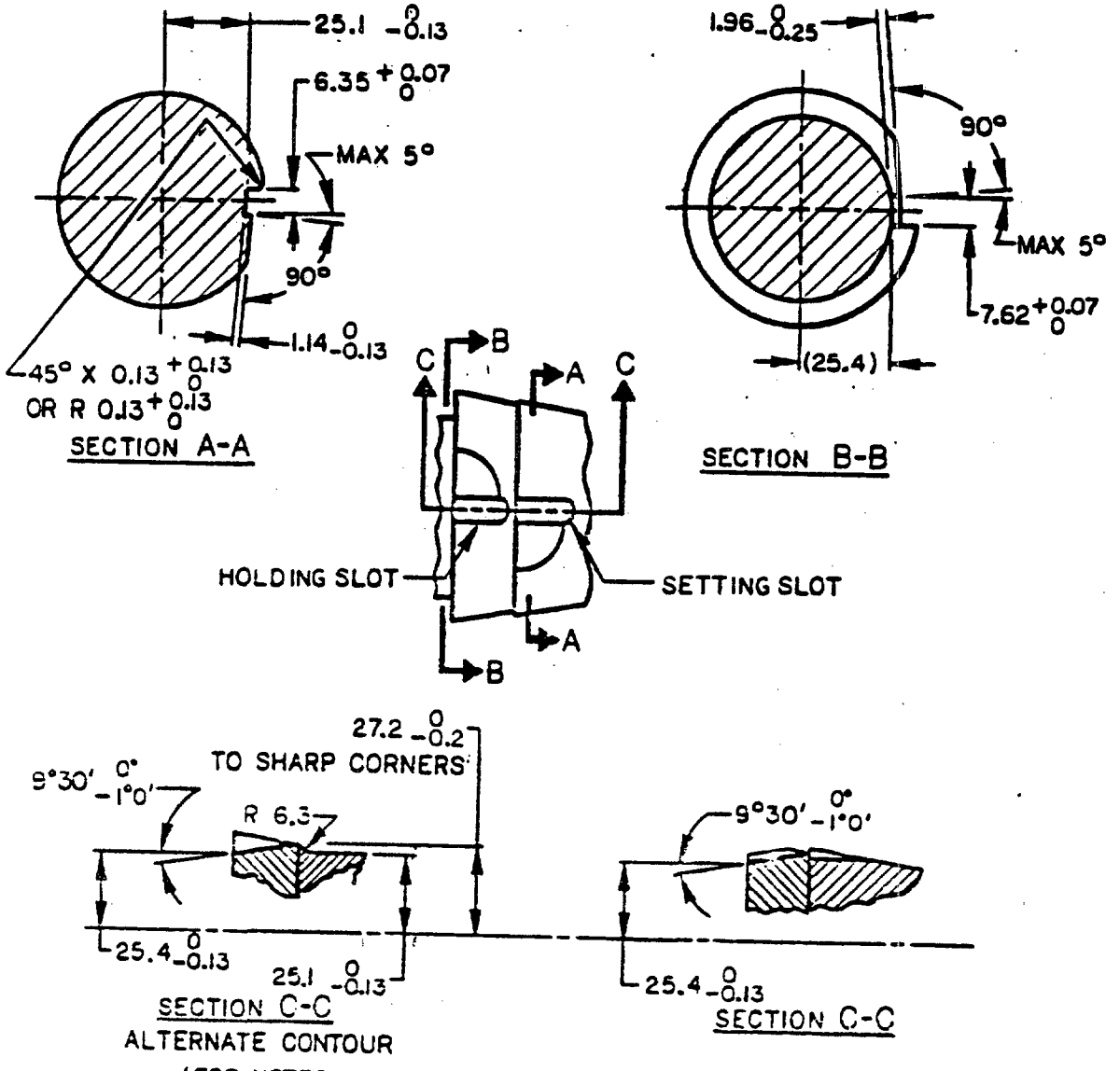
STANDARD CONTOUR FOR 2.4-INCH NOSE FUZES AND MATCHING CAVITY FOR 81 MM MORTAR ILLUM/SMOKE PROJECTILES.
(FIN STABILIZED)

PREFERRED AUTOMATIC/HAND SETTER SLOTS FOR MECHANICAL TIME RING-SET FUZES

Index of Figures

Preferred automatic/hand setter slots for mechanical time ring-set fuzes must be in accordance with Figures 11 and 12.

OTHER FEATURES	-------	FIGURE
DUAL PURPOSE TIME SETTING SLOTS (AUTOMATIC AND HAND MECHANICAL SETTERS)	ARMY USE	11
DUAL PURPOSE TIME SETTING SLOTS (AUTOMATIC AND HAND MECHANICAL SETTERS)	NAVY USE	12



(FOR NOTES, SEE FOLLOWING PAGE.)

FIGURE 11

DUAL PURPOSE FUZE TIME-SETTING SLOTS TO INTERFACE WITH AUTOMATIC AND HAND MECHANICAL ARMY SETTERS.

NOTES FOR FIGURE 11:

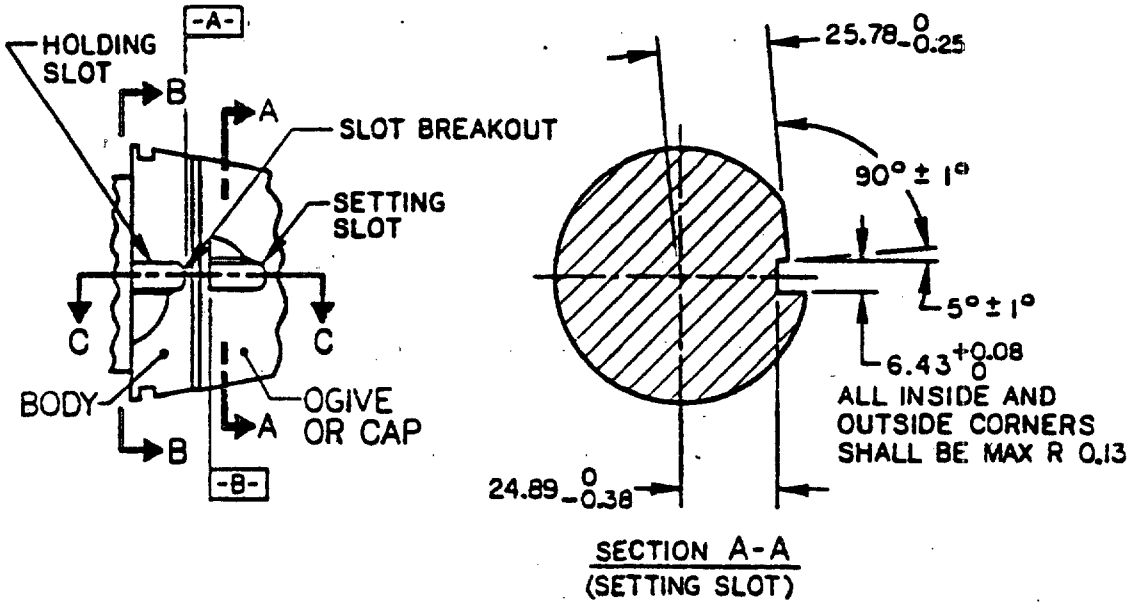
1 - DIMENSIONS SHOWN ARE FOR DUAL PURPOSE SLOTS FOR MECHANICAL SETTERS (AUTOMATIC AND HAND) FOR ARTILLERY AND MORTAR (81MM AND SPIN STABILIZED) MECHANICAL TIME AND PROXIMITY FUZES.

2 - ORIENTATION OF HOLDING SLOT TO SETTING SLOT IS SHOWN OUT OF POSITION FOR CLARITY.

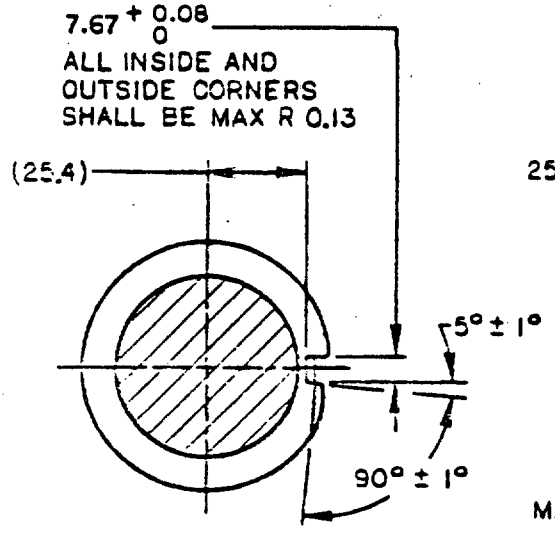
3 - THIS NOTE PERTAINS TO THE FUZE AS VIEWED FROM THE FRONT. WHEN THE FUZE IS SET IN THE SHIPPING POSITION, THE SETTING SLOT IS POSITIONED COUNTERCLOCKWISE FROM THE HOLDING SLOT AND TIME IS SET IN THE CLOCKWISE DIRECTION.

4 - VARIOUS DETAILS OF SECTIONS OMITTED FOR CLARITY.

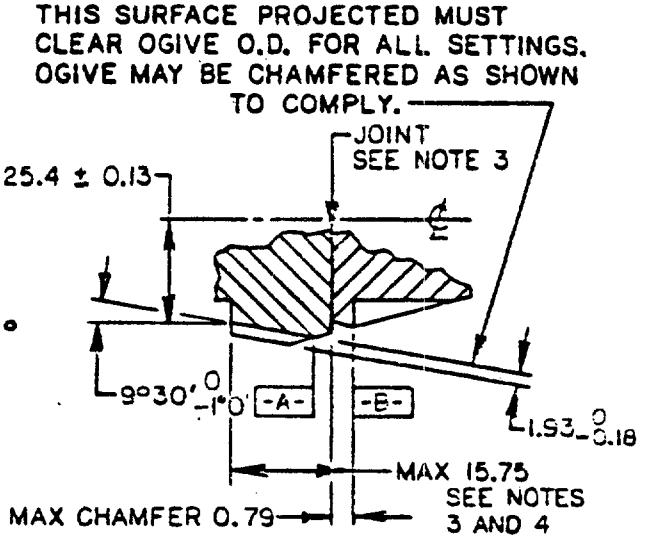
5 - FOR OTHER FUZE DIMENSIONS, SEE FIGURE 1.



SECTION A-A
(SETTING SLOT)



SECTION B-B
(HOLDING SLOT)



SECTION C-C

(FOR NOTES, SEE FOLLOWING PAGE.)

FIGURE 12

DUAL PURPOSE FUZE TIME-SETTING SLOTS TO INTERFACE WITH AUTOMATIC AND HAND NAVY MECHANICAL SETTERS.

NOTES FOR FIGURE 12:

1- DIMENSIONS SHOWN ARE FOR DUAL PURPOSE SLOTS FOR MECHANICAL SETTERS (AUTOMATIC AND HAND) FOR MECHANICAL TIME FUZES FOR USE ON NAVY PROJECTILES.

2- ALIGNMENT OF HOLDING SLOT WITH SETTING SLOT IS AN ARBITRARY ORIENTATION, SHOWN FOR CLARITY.

3- JOINT MAY VARY BETWEEN THE TOP OF DATUM A AND DATUM B, INCLUSIVE.

4- AT 15.75 MAX, MIN WIDTH OF SLOT IS 6.43. THE SETTING SLOT MAY BREAK OUT INTO JOINT.

5- FOR OTHER FUZE DIMENSIONS, SEE FIGURE 1. THE OGIVAL CONTOUR ENCOMPASSING THE SETTING AND HOLDING SLOTS SHALL NOT DEVIATE FROM THE MAXIMUM MATERIAL CONDITION, DEFINED IN FIGURE 1, BY MORE THAN 0.25MM.

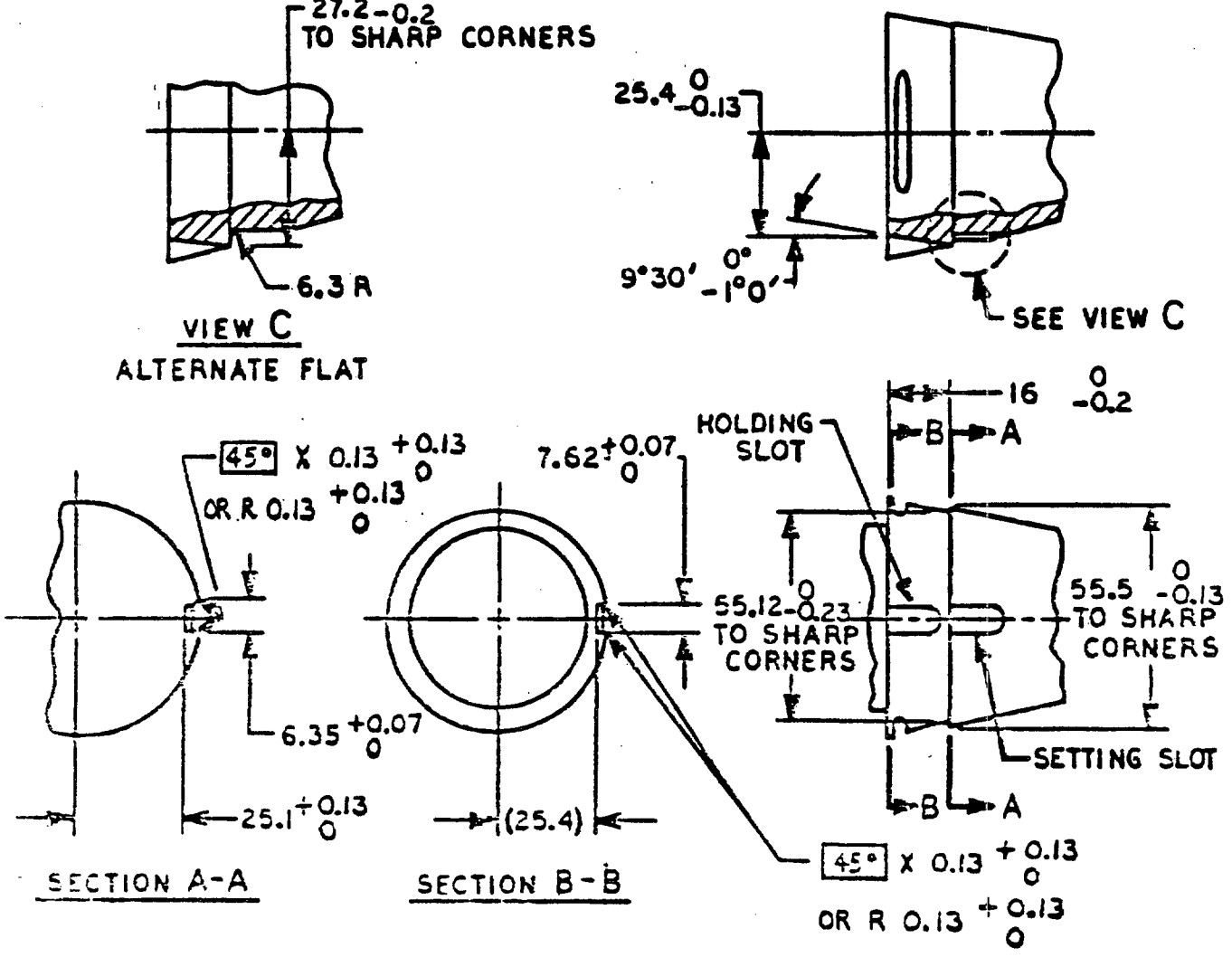
ANNEX D to
STANAG 2916
(Edition 1)

PERMISSIBLE HAND SETTER SLOTS FOR RING-SET FUZES

Index of Figures

Currently available permissible hand setter slots for ring-set fuzes are shown in Figures 13 and 14.

OTHER FEATURES	--------	FIGURE
TIME SETTING SLOTS (HAND MECHANICAL SETTERS)	--------	13
TIME SETTING SLOTS (HAND MECHANICAL SETTERS)	--------	14



(FOR NOTES, SEE FOLLOWING PAGE)

FIGURE 13

FUZE TIME SETTING SLOTS TO INTERFACE WITH HAND SETTERS FOR ARTILLERY AND MORTAR TIME FUZES.

NOTES FOR FIGURE 13:

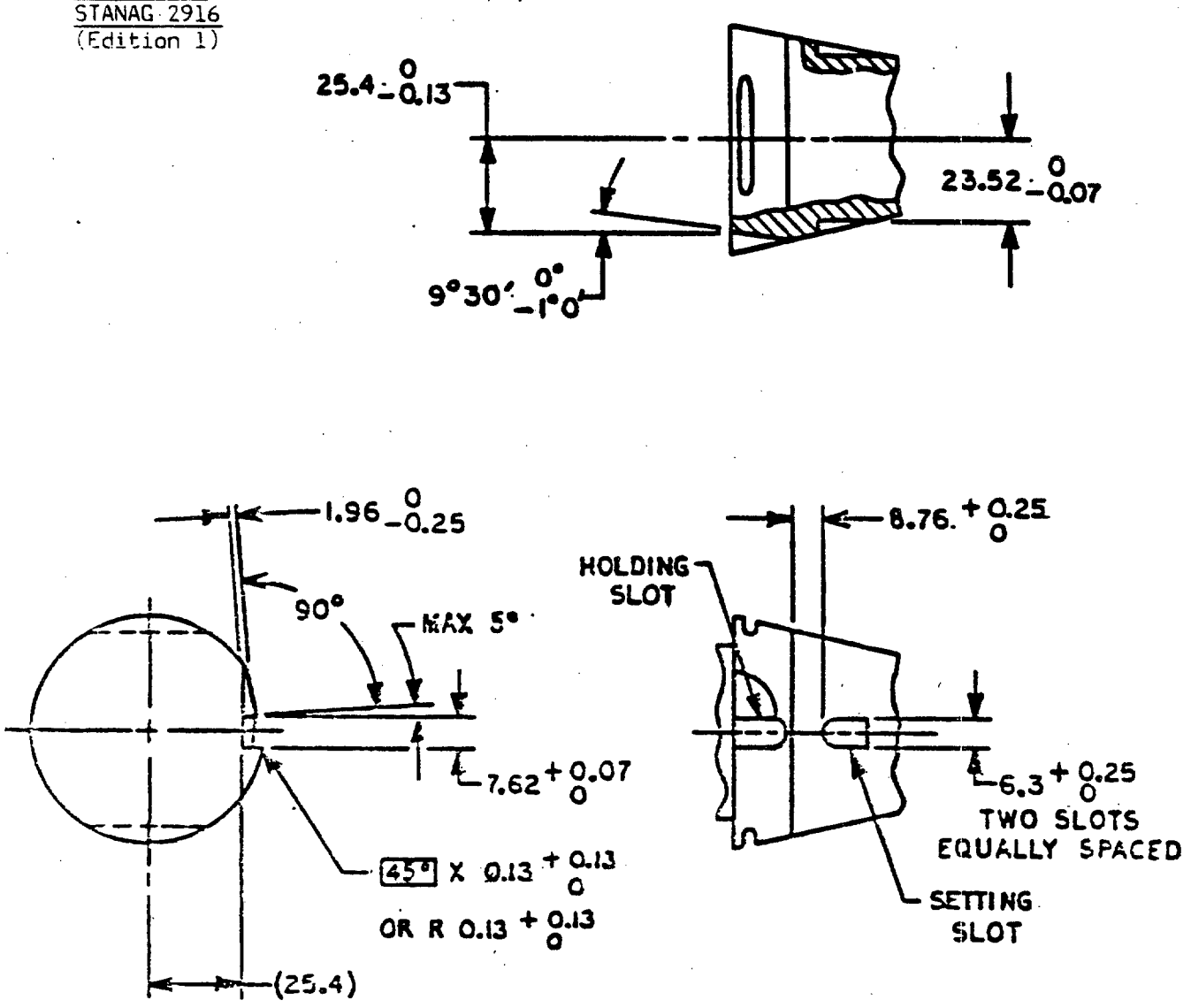
1- DIMENSIONS SHOWN ABOVE ARE FOR SLOTS FOR A MECHANICAL HAND SETTER FOR ARTILLERY AND MORTAR (81MM AND SPIN STABILIZED) MECHANICAL TIME AND DEEP INTRUSION PROXIMITY FUZES.

2- ORIENTATION OF HOLDING SLOT TO SETTING SLOT IS SHOWN OUT OF POSITION FOR CLARITY.

3- THIS NOTE PERTAINS TO THE FUZE AS VIEWED FROM THE FRONT. WHEN THE FUZE IS SET IN THE SHIPPING POSITION, THE SETTING SLOT IS POSITIONED COUNTERCLOCKWISE FROM THE HOLDING SLOT AND TIME IS SET IN THE CLOCKWISE DIRECTION. WHEN FUZE IS SET IN THE SHIPPING POSITION AND THE SETTING SLOT IS POSITIONED CLOCKWISE FROM THE HOLDING SLOT, TIME IS SET IN THE COUNTER-CLOCKWISE DIRECTION.

4- VARIOUS DETAILS OF SECTIONS AND VIEWS OMITTED FOR CLARITY.

ANNEX D to
STANAG 2916
(Edition 1)



NOTES:

1 - DIMENSIONS SHOWN ABOVE ARE FOR SLOTS FOR A MECHANICAL HAND SETTER FOR ARTILLERY AND MORTAR (81MM AND SPIN STABILIZED) TIME FUZES.

2 - ORIENTATION OF HOLDING SLOT TO SETTING SLOT IS SHOWN OUT OF POSITION FOR CLARITY.

3 - THIS NOTE PERTAINS TO THE FUZE WHEN VIEWED FROM THE FRONT. WHEN THE FUZE IS SET IN THE SHIPPING POSITION, THE SETTING SLOT CLOSEST TO THE HOLDING SLOT IS POSITIONED CLOCKWISE TO THE HOLDING SLOT AND TIME SET IN THE CLOCKWISE DIRECTION.

4 - VARIOUS DETAILS OF SECTIONS AND VIEWS OMITTED FOR CLARITY.

FIGURE 14

FUZE TIME SETTING SLOTS TO INTERFACE WITH HAND SETTERS FOR ARTILLERY AND MORTAR TIME FUZES.

ANNEX E to
STANAG 2916
(Edition 1)

DEFINITIONS

1. Cargo - A payload expelled or separated from the carrier, e.g., illuminating candle.

2. Cavity - The portion of the projectile that accepts the fuze.

3. Family of nose fuzes - Fuzes that are interchangeable with the same projectile, e.g., PD, MT, prox. (See abbreviations, page E-2.)

4. Fin stabilized - Fixed or adjustable vanes or airfoils affixed along the longitudinal projectile contour to ensure stability in flight.

5. Fuze or fuzing system - Any system designed to sense a target or the result of other presented conditions such as time, barometric pressure, command, etc., and to initiate an explosive train or detonation in a munition. Fuzing systems will normally contain explosive components integrated into their design. Safety and arming are primary functions performed by a fuzing system to preclude initiation of the munition before the desired position or time.

6. Fuze setter - A device for setting a unique and required function of the fuze. For the purpose of this STANAG, the following are not considered to be fuze setters: (a) commonly available aids used in setting such as screw drivers, and (b) devices to aid in setting which are shipped with each box of fuzes.

7. Intrusion - The portion of the fuze that extends into the cavity of the projectile.

8. Ring-set fuze - A time fuze where the ogive or part connected to the timing release mechanism rotates about the stationary body.

9. Setter slots (holder, setting) - Those features of a fuze which interact with a setter, either automatic or hand, to enable the setting of the required mode of function.

10. Spin stabilized - Rotation is imparted about the longitudinal projectile axis to insure stability in flight.

11. Wrench slots - Those features of a fuze, which in the assembly of the fuze to the projectile, permit tightening of the fuze.

ABBREVIATIONS

APERS	**Antipersonnel**
ARTY	**Artillery**
HE	**High Explosive**
ICM	**Improved Conventional Munition**
MT	**Mechanical Time Fuze**
PD	**Point Detonating Fuze**
PROX	**Proximity Fuze**
WP	**White Phosphorus**

RATIFICATION AND IMPLEMENTATION DETAILS
STADE DE RATIFICATION ET DE MISE EN APPLICATION

NATION	NATIONAL RATIFICATION REFERENCE DE LA RATIFICATION NATIONALE	NATIONAL IMPLEMENTING DOCUMENT NATIONAL DE MISE EN APPLICATION	IMPLEMENTATION/MISE EN APPLICATION					
			FORECAST DATE DATE PREVUE			ACTUAL DATE DATE REELLE		
			NAVY MER	ARMY TERRE	AIR	NAVY MER	ARMY TERRE	AIR
BE	GSA 527 of/du 16.2.88		11.90	11.90	11.90			
CA	2441-2916(DAME 2) of/du 26.5.88	D-09-002-010/ SG-001	1.89					
DA	M.204.69-S.2916-MAS-25687 of/du 19.10.88	STANAG				2.90	2.90	2.90
FR								
GE	BMVg Fü S IV 1 Az 03-51-60 of/du 21.3.88		3.90	3.90	3.90			
GR	No.069.174/57/350714/ D.No.104 of/du 8.2.88							
IT								
LU								
NL+	M88/0198/1222 of/du 15.2.88		11.90	11.90				
NO	MAS-112/87/B/HST/ORG 2/80/ DA/STANAG 2916 of/du 4.11.87	STANAG				1.88	1.88	1.88
PO								
SP								
TU								
UK	D/D STAN/341/8/2916 of/du 21.3.89		8.90	8.90	8.90			
US+	AMCICP-AA-G of/du 13.5.88	MIL-STD-333A	6.89	6.89				

+ *See comments overleaf/*
Voir commentaires au verso

COMMENTS/COMMENTAIRES

NETHERLANDS:

(1) Implementation of this STANAG one year after DoP by R.Nl. NAVY and the R.Nl.ARMY
(2) The R.Nl.AIR FORCE does not implement this STANAG

PAYS-BAS :

(1) La Marine royale néerlandaise et l'Armée de terre royale néerlandaise mettront ce STANAG en application un an après la date de promulgation.
(2) L'Armée de l'air royale néerlandaise ne mettre pas ce STANAG en application.

UNITED STATES:

U.S. Navy and U.S. Marine Corps defer to the U.S. Army regarding ratification position and will subscribe to U.S. Army implementation. U.S. Air Force poses no objection to agreement but will not subscribe due to no interest in the hardware to be standardized.

ETATS-UNIS :

La Marine des Etats-Unis et le corps des Marines des Etats-Unis suivent l'Armée de terre des Etats-Unis en ce qui concerne la ratification et se rallient à la mise en application de l'Armée de Terre. L'Armée de l'air des Etats-Unis ne s'oppose pas à l'accord mais ne l'appliquera pas, le matériel à normaliser ne présentant pas d'intérêt pour elle.